Rock Island Arsenal
Field and Siege Building
(Shop M, Building 220)
Rodman Avenue between Flagler Street
and Gronen Street
Rock Island
Rock Island County
Illinois

HAER No. IL-20-AA

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

ROCK ISLAND ARSENAL
FIELD AND SIEGE BUILDING
(Shop M, Building 220)
HAER No. IL-20AA

Location:	Rodman Avenue Between Flagler Street and Gronen Street, Rock Island Arsenal, Rock Island, Rock Island County, Illinois UTM: 15.704250.4598800 Quad: Davenport East
Date of Construction:	1917-1918
Present Owner and Occupant:	U.S. Army
Present Use:	Machine shop
Significance:	During and immediately after World War I, the Ordnance Department erected several buildings on Rodman Avenue, just west of the nineteenth-century, Greek Revival stone shops. To maintain the "grand boulevard" appearance of Rodman Avenue, these buildings were designed in a classical revival style. Completed in 1918, the Field and Siege Building was part of this construction program. It is a significant example of military industrial design that expanded the arsenal's manufacturing program while preserving its overall architectural integrity. The Field and Siege Building is part of the Rock Island Arsenal National Register Historic District.
Historian:	Jeffrey A. Hess, February 1985
Architectural Historian:	David Arbogast, February 1985

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: Building operations began on June 21, 1917. The building was partially occupied on December 19, 1917, and construction was completed on August 15, 1918 (War's Greatest Workshop, pp. 27-28).

2. Architect: Stone and Webster Company of Boston

3. Original and subsequent owners: U.S. Army.

4. Builder, contractor, supplier: Stone and Webster Company of Boston served as general contractor on a cost plus five per cent basis (War's Greatest Workshop, pp. 28-29).

5. Original plans and construction: The Rock Island Arsenal Engineering Plans and Services Division has original plans and elevations, dated 1917-1918, which show that the building was planned as a reinforced-concrete structure with a tall, one-story section fronting Rodman Avenue on the north and four wings extending to the south. The westernmost wing was a reinforced-concrete, one-story structure, approximately half the height of the section fronting Rodman Avenue. The other three wings were four-story, flat-slab structures equal in height to the section on Rodman Avenue.

   According to early photographs in the picture collection of the Rock Island Arsenal Historical Office, the building was constructed as planned. The construction of the north and east elevations of the one-story section on Rodman Avenue is documented by a 1918 photograph, captioned "394-29840 May 2, 1918 / 'Shop M,' looking southwest" (see HAER Photo No. IL-20AA-11). An interior view of this section is provided by a 1918 photograph, captioned "301-29281 X.O.6427 W4 3-29-18 / Field & Siege Building / Interior view of craneway looking west, showing progress of construction" (see HAER Photo No. IL-20AA-12). The south facades of all four wings are shown in a 1918 photograph, captioned "155-29809 May 2, 1918 / 'M' Shop." The interior flat-slab construction of one of the four-story wings is shown in a 1918 photograph, captioned "156-30791 Aug. 23, 1918 / Typical view showing shop construction current during the Great War of 1917-1918; note the reinforced concrete columns and great diffusion of daylight thru large windows" (see HAER Photo No. IL-20AA-13).

The building's present configuration conforms to the original construction, except that a one-story, steel-framed wing fronting Rodman Avenue has been added to the west elevation of the tall, one-story section.

6. Alterations and additions: The Rock Island Engineering Plans and Services Division has plans and elevations, dated 1918, for a one-story, steel-framed addition to the west elevation of the original, tall, one-story section fronting Rodman Avenue. The plans were prepared by Stone and Webster Company, which also served as general contractor for the addition (War's Greatest Workshop, p. 30). The addition was completed in January 1919 (Completion Report, p. 7). Photographs documenting the construction have not been located. But a contemporary observer described the addition as follows: "The Steel Storage [Addition], . . . located at the west end of the Field and Siege Building (Shop M), is a one-story steel-framed building on concrete foundations, and with an outside concrete wall to the height of the lower window sills. The superstructure walls are of hollow tile, plastered on the outside. The front walls of the building are entirely of concrete, to match the architecture of the Field and Siege Building as viewed from [Rodman] Avenue. The roof is of wood, supported on steel trusses. The building is 107 feet wide and 322 feet long, with a row of steel columns down the center. Two crane-ways are provided for, running the whole length of the building, one on each side of the center row of columns" (War's Greatest Workshop, p. 30).

   In 1942, a pair of small concrete, gable-roofed buildings were constructed in the courtyard between the two central original wings to serve as a well house for the Field and Siege Building ("Real Property Inventory"). Plans and photographs documenting the construction of these outbuildings have not been located.

   About 1970, the original industrial steel sash on the third and fourth floors of the center wing was infilled with concrete block. The Rock Island Arsenal Engineering Plans and Services Division has plans, dated 1969, detailing this alteration.

B. Historical Context:

Designed and built by Stone and Webster Company of Boston, the Field and Siege Building was constructed in 1917-1918 for the manufacture of artillery recoil mechanisms. During the 1920s and 1930s, the building was the arsenal's main industrial plant, used primarily for assembling tanks and artillery carriages. From 1918 to 1942, the building also housed a forge shop in the westernmost of the original

wings ("History Artillery Vehicle," n.p.; "Completion Report," map showing "general plan of work"). During World War II, the Field and Siege Building remained "the chief manufacturing shop," producing "recoil mechanisms, parts for artillery carriages, automotive vehicles, tools and miscellaneous items" (Stephens, p. 397).

Although the building continued to assemble a variety of ordnance items after World War II, it increasingly became a custom-order machine shop for speciality ordnance components. Its capacity for such work was largely due to the installation, beginning in 1959, of high-speed, close-tolerance, numerically-controlled machine tools ("Rock Island Arsenal --Its First Century," p. 5). The Field and Siege Building was alternately designated as "Shop M" at the time of its construction; it has been designated as "Building 220" at least since World War II ("History Artillery Vehicle," n.p.; for additional documentation, see HAER No. IL-20.)

Prepared by: Jeffrey A. Hess
MacDonald and Mack Partnership
February 1985

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: The building is an extremely large manufacturing plant exhibiting the style called Stripped Classicism, which was later popularized by architects such as Paul Cret, primarily for Federal structures during the Great Depression. The building has a main block with four wings and a later addition. Excluding one wing and the addition, it is four stories above a basement, with a flat roof. It survives as a prime example of a World War I ordnance building.

2. Condition of fabric: The building is well-maintained and is in good condition.

B. Description of Exterior

1. Overall dimensions: The main block (HAER Photo No. IL-20AA-1) measures 600'(30 bays) x 60'(3 bays) with three typical 80'(4 bays) x 200'(10 bays) projecting wings (HAER Photo Nos. IL-20AA-2 and IL-20AA-3) located, from the east, at the first through fourth bays, the seventh through eleventh bays, and the fourteenth through eighteenth bays of the south elevation of the main block. An atypical wing of similar length is located at the twentietb through twenty-sixth bays of the south elevation of the main block. The building and its three typical wings are four stories

tall except for a full-height, one-story section across the north measuring 600' (30 bays) x 40' (2 bays). The atypical wing is one story in height. There is a basement under the four-story section and the atypical wing, but not the full-height one-story north section.

2. Foundations: Poured, reinforced concrete.

3. Walls: Poured, reinforced concrete frame (HAER Photo Nos. IL-20AA-1, IL-20AA-2, IL-20AA-3, and IL-20AA-4). The ground floor walls of the main block north, east, and west elevations (HAER Photo Nos. IL-20AA-1 and IL-20AA-4) are solid concrete. Colosssl concrete pilasters (HAER Photo Nos. IL-20AA-1, IL-20AA-2, IL-20AA-3, and IL-20AA-4) rising from the ground floor to the entablsture divide the elevations into a regular bay system. The northeast (HAER Photo No. IL-20AA-4) and northwest corners are given emphasis by sets of three bays with heightened parapet walls having, in addition to the regular entablature, flat roundels in the frieze and Ordnance Corps insignia centered in the top. All exterior concrete is painted cream. North of the center doorway of the east elevation of the east wing is a cast bronze dedication plaque (HAER Photo No. IL-20AA-5).

4. Structural systems: Poured, reinforced concrete walls, exterior frame, and round interior columns (HAER Photo Nos. IL-20AA-8 and IL-20AA-9) with spread capitals in all sections except the north, full-height section, which has square concrete piers (HAER Photo No. IL-20AA-7). Floor and roof systems are poured concrete, except in the north, full-beight section, where the roof is supported on flat steel trusses (HAER Photo No. IL-20AA-7) and in the atypical wing where the roof is also supported on large, flat steel trusses.

5. Porches: Porches (HAER Photo Nos. IL-20AA-2 and IL-20AA-3) are typically located along the east and west elevations of the wings connecting the first-floor and basement levels to grade. Typical porches have poured concrete sides and steps and iron pipe railings.

6. Chimneys: Numerous round sheet metal flues (HAER Photo No. IL-20AA-3) emanate from random openings in the window walls facing the courtyards between the wings.

7. Openings:

   a. Doorways: Four principal first-floor doorways (HAER Photo Nos. IL-20AA-1 and IL-20AA-4) are located at regular intervals along the north elevation. The two eastern doorways retain pairs of original doors filling their openings. Each leaf has

wood panels with diagonal, beaded, tongue-and-groove, boards in a stop-chamfered, wood frame. The other two doorways contain modern overhead doors, as do original doorways in the east and west elevations. The east and west elevations of the wings (HAER Photo Nos. IL-20AA-2 and IL-20AA-3) contain doorways at random intervals connecting the basement and first-floor levels to grade. These openings are quite plain, being fitted to the bays of the wall. They contain pairs of sundry non-original doors.

b. Windows: The north elevation of the first floor (HAER Photo No. IL-20AA-1) has small, small, rectangular window openings centered in each bay except those containing doorways. These contain sixteen-light steel sash with four-light hopper sash in their center. The upper north elevation and the east, west, and wing elevations (HAER Photo Nos. IL-20AA-1, IL-20AA-2, IL-20AA-3, and I1-20AA-4) from the basement upward, all contain glazed steel window walls between the pilasters. The window walls of the third and fourth floors of the center wing (HAER Photo No. IL-20AA-3) have been replaced with concrete block. In the roof of the atypical wing are four long skylights. Two are monitor form with corrugated fiberglass panels and the other two are hipped with wire glass.

8. Roof:

a. Shape, covering: The roof is flat and is covered with tar and gravel.

b. Cornice, eaves: The roof is surrounded by a parapet wall (HAER Photo Nos. IL-20AA-1, IL-20AA-2, IL-20AA-3, and IL-20AA-4) and has an internal water drainage system tied to an underground drainage system.

8. Ancillary structures: West of the main block and flush with its north elevation is a rectangular-plan, one-story, one-room, flat-roofed addition extending south the same distance as the wings. It has no basement. Exterior concrete frame walls are filled with structural clay tile andcovered with modern metal siding. The flat concrete roof is covered with tar and gravel and has hipped skylights with corrugated blue-green fiberglass panels. There are no windows and primary access is from the west end of the main block of the building.

C. Description of Interior:

1. Floor plans: The building is an industrial factory and contains few partitions. They are primarily related to some areas of offices, stairways, elevators, and restrooms. Restrooms are typi-

cally clustered with stairs, janitor closets, locker rooms, and freight elevators at the intersections of the wings with the main block.

a. Basement: The main block basement is limited to the south bay and opens to the wings, which have full basements. The basement is primarily an open storage space with a turbine room in the west wing and manufacturing in the atypical wing.

b. First floor: The first floor has a full-height section (HAER Photo No. IL-20AA-7) along the north and normal-height areas on the south side of the main block and in the wings. There is no access at the first-floor level to the atypical wing. The floor area is devoted to manufacturing, except at the south end of the west wing, where there is an open office area.

c. Second floor: The second floor has a narrow south section in the main block with three balconies (HAER Photo No. IL-20AA-7) overlooking the full-height front section. The second floor extends across the east end of the main block and its west wall is fully glazed with industrial steel sash overlooking the full-height section. This portion contains offices which extend into the east wing. The remainder of the floor is devoted to manufacturing.

d. Third Floor: The third floor has a narrow south section in the main block overlooking the full-height section with four balconies (HAER Photo No. IL-20AA-7). The west wing and the west end of the main block is a testing laboratory and the remainder of the floor is devoted to manufacturing.

e. Fourth Floor: The fourth floor has a narrow south section without balconies (HAER Photo No. IL-20AA-7) overlooking the full-height area. The west wing and west end of the main block is a testing laboratory with the remainder of the floor devoted to manufacturing.

2. Stairways: There are four primary (HAER Photo No. IL-20AA-10) and three secondary stairways serving the building. The primary stairs run from the basement to the roof and are located at the intersection of the wings with the main block and near the west end of the main block. They are steel, U-plan stairs with intermediate landings. The landings are covered with concrete and there are pipe railings painted black. These match the pipe railings of the second through fourth floor levels overlooking the full-height area. One secondary stair is a straight-run steel stair with pipe railings connecting the offices in the south end

of the west wing and the basement. The other two secondary stairways run from the baaement to the first floor in the atypical wing. Of these two stairways, one is straight-run and the other is L-plan with an intermediate landing. Both have pipe railings.

3. Flooring: Typical flooring is poured concrete (HAER Photo Nos. IL-20AA-7 and IL-20AA-8) with a sealer applied to it. The first through third floors of the west wing and the entire fourth floor have end-grain block wood flooring (HAER Photo No. IL-20AA-9) over the concrete. The office floors are covered with linoleum tile. The laboratory area of the third floor has concrete flooring covered with sheet linoleum.

4. Wall and ceiling finishes: Typical outer walls and columns (HAER Photo Nos. IL-20AA-7, IL-20AA-8, and IL-20AA-9) are painted concrete. Typical interior partition walls are painted concrete hlock; wire cage; original, vertical, beaded, tongue-and-groove hoard walls, of which some in the basement have wire cage above them and the reat have sixteen-light and eight-light, fixed, wood sash (HAER Photo No. IL-20AA-9); painted gypsum hoard; and demountable partitions. The basement has some painted brick walls in the turbine room. The first floor has a small, stainleas ateel room. All ceilings are painted concrete (HAER Photo Nos. IL-20AA-7, IL-20AA-8, and IL-20AA-9).

5. Openings:

   a. Doorways and doors: No original doorways survive. Thus, all doorways are of relatively recent vintage appropriate to their respective partitions.

   h. Windows: Window openings (HAER Photo No. IL-20AA-7) are concrete with no casinga or other trim.

6. Hardware: Original hardware survives on the two pairs of original exterior doors. Each leaf has three, heavy strap hinges. Original steel window hardware survives for the operable portions of the window walls.

7. Mechanical equipment:

   a. Heating, air conditioning, ventilation: The huilding is heated by ateam radiators. There ia no mechanical air conditioning or ventilation system other than those required for small portions of manufacturing and testing.

   h. Lighting: Artificial illumination is hy means of fluorescent electrical fixtures (HAER Photo Noa. IL-20AA-8 and IL-20AA-9)

except for mercury vapor fixtures (HAER Photo No. IL-20AA-7) in tbe full-height north section and incancdescent fixtures in the main block section of the basement, which may be the only remnants of the original artificial lighting system. One original decorative cast bronze incandescent light standard supporting a white glass globe (HAER Photo No. IL-20AA-5) survives south of the center doorway of the east elevation of the east wing.

c. Plumbing: No original plumbing fixtures survive.

d. Elevators: All four original freight elevators survive in an upgraded and modernized condition.

e. Machinery: A large, original overhead crane (HAER Photo No. IL-20AA-7) survives on a steel track at the fourtb-floor level of the full-height section of tbe building. No original manufacturing machinery is known to survive in the building, other than the crane. For security reasons, information regarding existing machinery was not available.

D. Site:

1. General setting and orientstion: The building faces Rodmsn Avenue, the arsenal's principal street, to the north and fills the block between Flagler Street to the east snd Gronen Street to the west. Gronen Street is in the process of being ersdicated with new construction of a building connecting Building 220 with Building 210, a beavy machine shop. In the courtyard formed between the west and center wings is Building 213, a deep well. Across Rodman Avenue is Building 390, a headquarters building, to the east, and Building 350, an administration building, to the west. East of the building, across Flagler Street, is Building 225, a police and fire station. Soutb of the building runs a railroad track, across which at the west end is Building 222, a forge shop. The site slopes to the south, fully exposing the basement stories of the wings.

2. Outbuildings: There is one outbuilding, Building 213, the Deep Well, located in the courtyard between tbe center and west wing. It is actually a pair of very small buildings separated from each other by two feet. The rectangular-plan buildings have steep, asphalt-shingled gable roofs aligned with each other with a ridge running north to south. The massive, poured concrete walls taper as they rise, supporting the relatively light roofs and clapboarded gable ends. There is a slab door centered in the north wall of the north unit and a small, hinged, vertical, board door centered in the south gable of tbe soutb unit. Window openings con-

taining six-light, wood sash are centered in the east and west walls of the north unit.

Prepared by: David Arbogast
Architectural Conservator
February 1985

PART III. SOURCES OF INFORMATION

A. Original Architectural Drawings:

The Rock Island Arsenal Engineering Plans and Services Division has the following original drawings that show the major details of the 1917-1918 construction program:

Stone and Webster, "East Elevation Superstructure -- Field & Siege Building," October 11, 1917.

Stone and Webster, "North Elevation -- Sheet No. 1, Superstructure -- Field & Siege Building," December 22, 1917, RIA B220-B2, D40135A.

Stone and Webster, "North Elevation -- Sheet No. 2, Superstructure -- Field & Siege Building," October 11, 1917, RIA B220-B1, D40135.

Stone and Webster, "South Elevation -- Sheet No. 1, Superstructure -- Field & Siege Building, February 16, 1918, RIA B220-B5, D40135D.

Stone and Webster, "South Elevation -- Sheet No. 2, Superstructure -- Field & Siege Building," September 14, 1917, RIA B220-B6, D40135E.

Stone and Webster, "West Elevation -- Superstructure -- Field & Siege Building," RIA B220-B4, D40135C.

Stone and Webster, "East Elevation -- Middle & West Wings Superstructure -- Field & Siege Building," February 16, 1918, RIA B220-B7, D40135F.

Stone and Webster, "South & West Elevations -- Superstructure -- Forge Shop," September 14, 1917, RIA B220-B9, D40135H.

Stone and Webster, "North & East Elevations -- Superstructure -- Forge Shop," February 16, 1918, RIA B220-B8, D40135G.

Also on file at the Rock Island Arsenal Engineering Plans and Services Division are drawings for the following additions and alterations:

Stone and Webster, "Floor Plan -- Superstructure -- Steel Storage Building," September 5, 1918, RIA E220-33, D401506. Shows construction of westernmost wing, completed in 1919.

Stone and Webster, "Plan, Elevations & Section -- Superstructure -- Steel Storage Building," August 27, 1918, RIA B220-A10, D40150. Shows construction of westernmost wing, completed in 1919.
Stone and Webster, "Roof Plan -- Superstructure -- Steel Storage Building," September 26, 1918, RIA B220-A48, D40150N. Shows construction of westernmost wing, comleted in 1919.

"Hydropneumatic Recoil Assembly Facility, Architectural Interior Elevations," April 8, 1969, 37-07-07, DACA 23-69-B-0059. Shows details for masonry infilling of original sash on third and flourth floors of center wing.

B. Early Views:

The following photographs are in the picture collection of the Rock Island Arsenal Historical Office:

Photograph of south facades of four original wings, captioned "155-29809 May 2, 1918 / 'M' Shop"; documents original construction.

Photograph showing west facade of easternmost wing and west and north facades of one-story section on Rodman Avenue, captioned "394-29840 May 2, 1918 / "'Shop M,' looking southwest" (see HAER Photo No. IL-20AA-11); documents original construction.

Photograph of interior of one-story section fronting Rodman Avenue, captioned "301-29281 X.O.6427 W4 3-29-19"; documents original construction (see HAER Photo No. IL-20AA-12).

Photograph of interior of one of the four-story wings, captioned "156-30791 Aug. 23, 1918 / Typical view showing shop construction current during the Great War of 1917-18; note the reinforced concrete columns and great diffusion of daylight thru large windows" (see HAER Photo No. IL-20AA-13); documents original construction.

C. Bibliography:

1. Primary and unpublished sources:

"History Artillery Vehicle Department, 1939-1942," vol. 2. Ca. 1942. Rock Island Arsenal Historical Office.

Real Property Cards. Rock Island Arsenal Engineering Plans and Services Division. Briefly describes building's structural characteristics, and maintenance history.

Real Property Inventory, computer printout, March 31, 1982. Rock lsland Arsenal Engineering Plans and Services Division. Gives construction date for the pair of outbuildings.

"Rock Island Arsenal -- Its First Century," computer prinout, May 29, 1984. Rock lsland Arsenal Historical Office. Notes installation of first numerically-controlled machine tools.

2. Secondary and published sources:

Completion Report Covering All Construction Projects Accomplished Under Supervision of the Construction Division, U.S. Army at Rock lsland Arsenal. N. pl.: n. pub., 1922. Rock lsland Arsenal Historical Office. Describes construction of original building and 1919 addition.

War's Greatest Workshop Rock lsland Arsenal. N. pl.: Arsenal Publishing Co. of the Tri-Cities, 1922. Rock Island Arsenal Historical Office. Describes planning and construction of the original building and 1919 addition.

PART 1V. PROJECT INFORMATION

This project was part of a program initiated through a memorandum of agreement between the National Park Service and the U.S. Department of the Army. Stanley J. Fried, Chief, Real Estate Branch of Heaquarters DARCOM, and Dr. Robert J. Kapsch, Chief of the Historic American Buildings Survey/Historic American Engineering Record, were program directors. Sally Kress Tompkins of HABS/HAER was program manager, and Robie S. Lange of HABS/HAER was project manager. Building Technology Incorporated, Silver Spring, Maryland, under the direction of William A. Brenner, acted as primary contractor, and MacDonald and Mack Partnership, Minneapolis, was a major subcontractor. The project included a survey of historic properties at Rock Island Arsenal, as well as preparation of an historic properties report and HABS/HAER documentation for 38 buildings. The survey, report, and documentation were completed by Jeffrey A. Hess, historian, Minneapolis; Barbara E. Hightower, historian, Minneapolis; David Arbogast, architectural historian, Iowa City, lowa; and Robert C. Mack, architect, Minneapolis. The photographs were taken by Robert A. Ryan, J Ceronie, and Bruce A. Harms of Dennett, Muessig, Ryan, and Associates, Ltd., Iowa City, Iowa. Drawings were produced by John Palmer Low, Minneapolis.